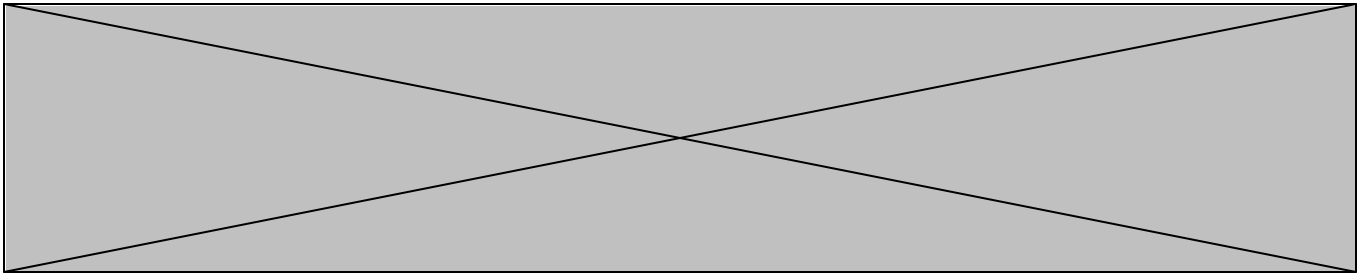


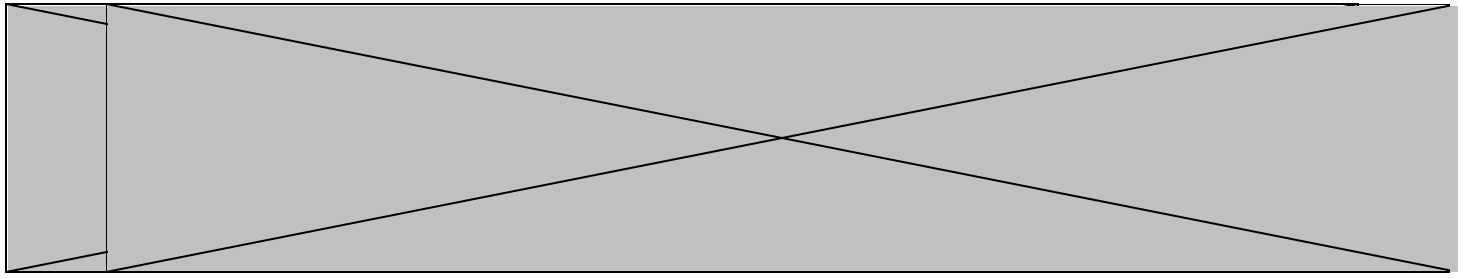
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AND TRANSPORTATION

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STATEMENT OF
MR. STEVEN PRICE
DEPUTY ASSISTANT SECRETARY OF DEFENSE
SPECTRUM, SPACE, SENSORS AND C3
BEFORE THE
SENATE COMMITTEE ON COMMERCE, ENERGY AND TRANSPORTATION
ON 11 JUNE 2002
CONCERNING
SPECTRUM MANAGEMENT: IMPROVING THE MANAGEMENT
OF GOVERNMENT AND COMMERCIAL SPECTRUM
DOMESTICALLY AND INTERNATIONALLY

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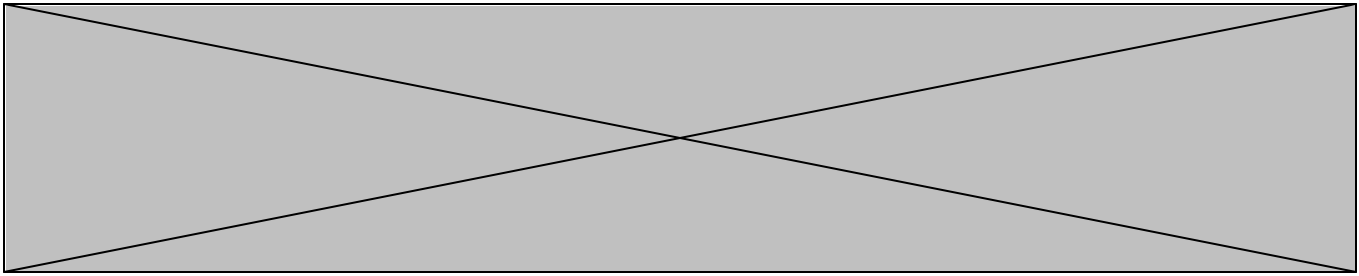




1. Introduction

I would like to thank the members of this committee, and particularly Chairman Inouye, for holding this hearing on spectrum management and use. I think that our experiences in Afghanistan indicate just how important this issue is to our armed forces.

DoD's spectrum needs are increasing due to new operational concepts, including more extensive use of Unmanned Aerial Vehicles, as well as evolving strategies that require joint, dispersed forces to have greater connectivity in the "last tactical mile." One of the platforms used in Operation Enduring Freedom is the Predator. This new type of military system is an Unmanned Aerial Vehicle (UAV). Because the plane is unmanned, it must be controlled and operated remotely. That means it is entirely dependent on spectrum, both for flight control and to pass along information. Without spectrum the Predator would, in aviator parlance, "go stupid"—it could neither fly nor be able to pass on information or images, which is its core function. In Afghanistan, we used Predators to laser-designate targets for bombers, and the Air Force is even testing how well Predators can fire laser-guided missiles. Many experts see Predators and other UAVs as being in a similar developmental phase as manned aircraft were in the 1920s and 30s. This is, of course, great news because we can do so much, without risking lives, in reconnaissance, targeting and now even firing of weapons. There is, however, a cost to all of this, and that cost is in spectrum. These UAVs absolutely depend on spectrum; if they



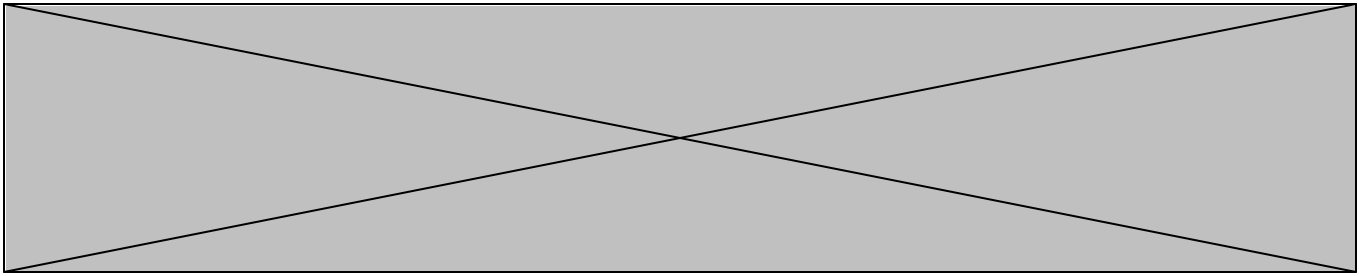
don't have it, they fall out of the sky.

The Predator example is just one indication of how spectrum is crucial for DoD's entire mission, including homeland security. Fully sufficient spectrum is essential in accomplishing national defense missions, and ensuring that the Department of Defense retains such spectrum it needs is a top national priority.

Mr. Chairman, as I will discuss in more detail in my testimony, spectrum is integral to our nation's defenses. It is critical to the success of national security policy at home and abroad. We must be able to inform you, the commercial sector and the general public of that importance as we try to balance the relative values of competing interests.

Spectrum is the lifeblood of the Department of Defense. Every ship at sea, every airplane conducting missions, every forward-deployed young man or woman—especially in hard to reach locations—depends on radios and spectrum to conduct missions and to return home safely. Captain Jason Armerine, a Special Forces Team Leader during Operation Enduring Freedom, spoke about his experience in the early days of the Afghanistan campaign: “We could go in there naked with flip-flops and as long as we have good radios, we could do our job.”

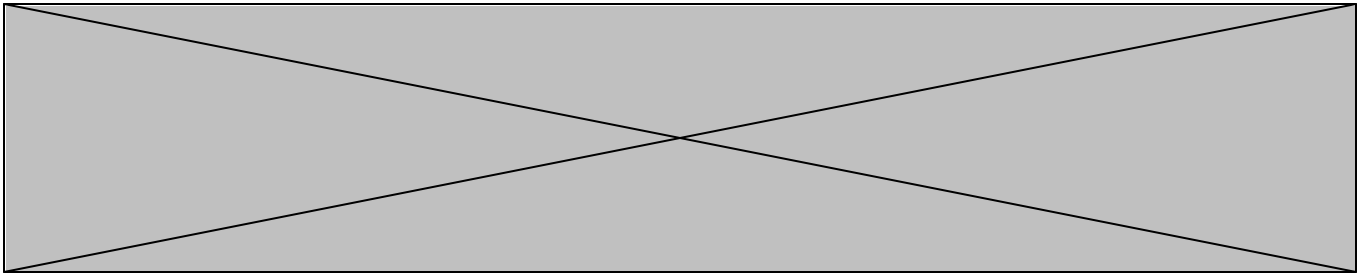
This will be even truer in the future, as DoD's ongoing transformation to a network-centric military will add new demands. A DoD spectrum requirements analysis, completed prior



to September 11, 2001 (and therefore likely to be an underestimate) predicted DoD spectrum usage growth of more than 90 percent by 2005. In addition, there will be new demands in the arena of homeland defense. These will likely include new spectrum related missions, such as military support for major events (such as was the case in the 2002 Winter Olympics in Salt Lake City), protection of critical infrastructure and emergency response.

Spectrum is one of our nation's most valuable natural resources. It is not uncommon for us to use land or real estate analogies to describe spectrum. We use terms like "beachfront property"-- that's how valuable it is. The reason it is so valuable is that it enables so much of the technology that many people look to in order to solve many problems. The communications and information revolution has now resulted in commercially successful technologies unimagined several years ago: such as, tiny wireless phones, wireless local area networks (LANs), Internet access from virtually anywhere in the world.

But these technologies are even more important to the military because of the lack of any wired alternative in many military operations. Wireless technologies are particularly important for our military forces' operations because of their increasingly mobile and flexible nature. The ongoing revolution in military affairs/operations has made information the key component of warfare. Mass of force no longer has the power it once did because our tactics are more sophisticated, as are our warfighters and the equipment they carry. The revolution in

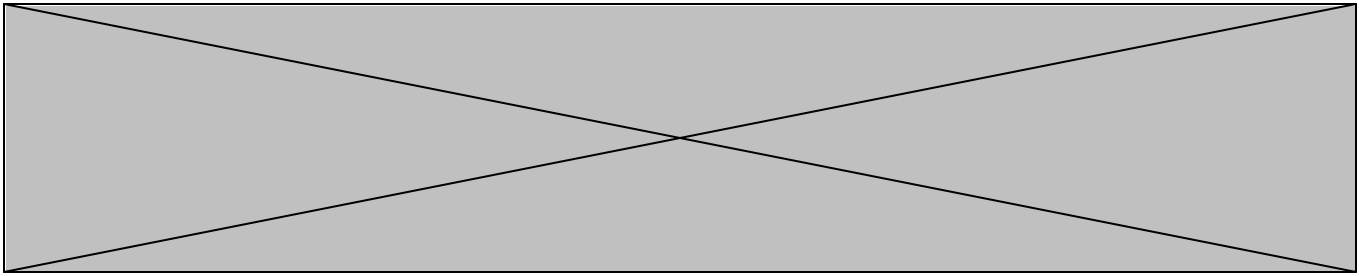


personal communications that civilians have experienced is mirrored by a similar revolution in military communications. We can make a phone call or access the Internet on a landline, but the ship captain, bomber pilot or tank commander has no other option but wireless communications. And because of the way we fight, that information is more important than ever, both to the troops in the field and to the commanders—whether they are in theater or 12,000 miles away.

The pressure on government spectrum will not end. Wireless technologies will continue to proliferate. While 3G services have yet to be widely deployed, there is already industry discussion of 4G and 5G technologies, as well as widespread wireless LANs. We should resist the convenient arguments that these burgeoning technologies should be supported by reallocation of more government spectrum—we must arrive at a sound spectrum policy that allows our commercial interests to coexist with public interests.

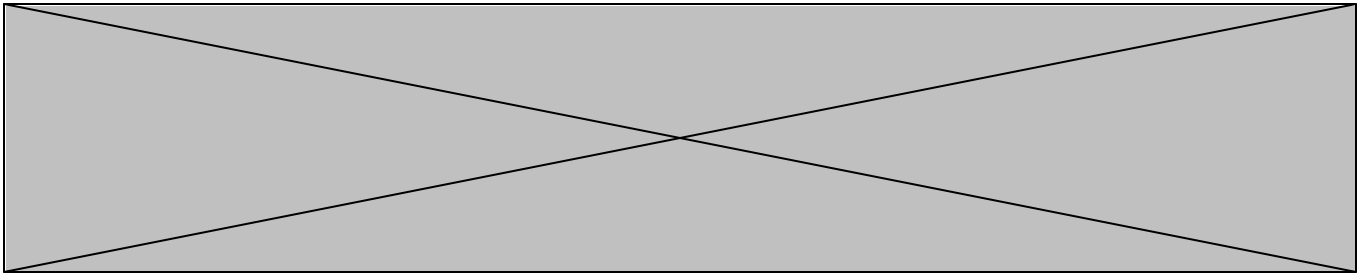
2. DoD use of spectrum

Spectrum enables almost every function that DoD performs. Whenever mobile platforms—whether satellites, ships or trucks—exchange information, spectrum is involved. I would like to go through some examples of this just to give you a flavor of what we are really talking about here. Military strategists around the world—and, in fact, the American public—have seen first-hand in Afghanistan how the United States has been able to defeat an



extraordinarily determined enemy in some of the world's most inaccessible terrain. We have demonstrated the advantage to our nation of asymmetric warfare, relying upon networked satellites, UAVs, air support, precision-guided weapons and Special Forces on the ground. The accuracy of precision-guided weaponry is dependent on our GPS satellite system and on UAVs that can spot the enemy very effectively. The weapons guidance systems are entirely dependant on radio spectrum. Where sky-based surveillance alone does not provide our forces and their allies with sufficient knowledge of circumstances on the ground, we have relied on radio-based communications between our ground-based forces and air-based forces, and indeed, the Central Command in Tampa, Florida. What we have is an extraordinarily complex electromagnetic ecosystem. Indeed, I would posit that it is one of the most complex electromagnetic ecosystems in the world, all functioning exceptionally well under battlefield conditions. The preparations for this Afghanistan scenario, and its enactment itself, are based in large measure on spectrum in the bands from 1755 MHz to 1770 MHz—precisely the bands that industry has targeted over the past year. Let me describe some of the critical DoD systems that operate in these bands.

The uplinks that control all DoD and intelligence satellites—more than 120 satellites representing a cumulative investment of about \$100 billion—use spectrum in the 1755 – 1850 MHz band. These satellites perform communications, positioning and timing, surveillance and

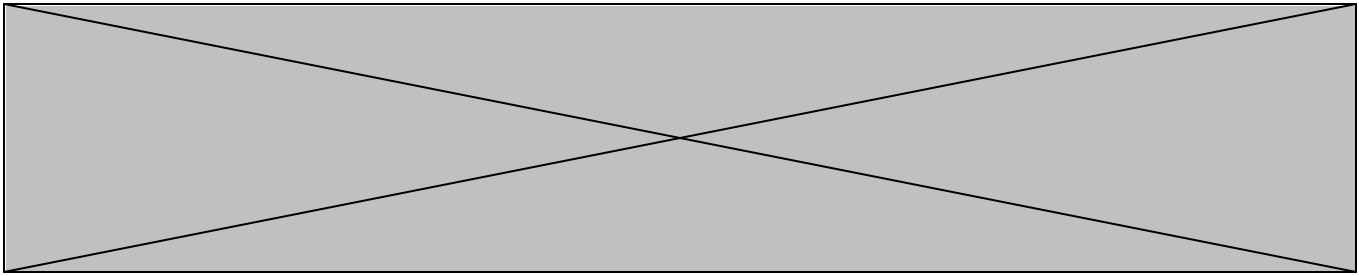


reconnaissance, weather observation, and other functions crucial to warfighting and to decision-making. The telemetry, tracking and command systems for all of these satellites resides in the critical 1755-1770 band which is still under consideration. In addition to the satellite control function, the 1755-1850 MHz band also serves as an uplink to provide processed weather data and navigation timing information to DoD satellites for down linking to DoD users on a worldwide basis.

DoD's GPS satellites have become crucial parts of the national civilian/military infrastructure, supporting global navigation and positioning requirements for air, land and sea vessels. Today in Afghanistan, GPS supports everything from precision-guided munitions to Special Forces operations. Precision targeting done by special operations forces is virtually impossible without GPS.

Battlefield radio relay systems also use the 1755-1850 MHz spectrum and form the long-haul backbone of the Army and Marine tactical Internets. They let our ground forces share situational awareness and coordinate their operations in real time across the extended battlefield, as well as with ships offshore.

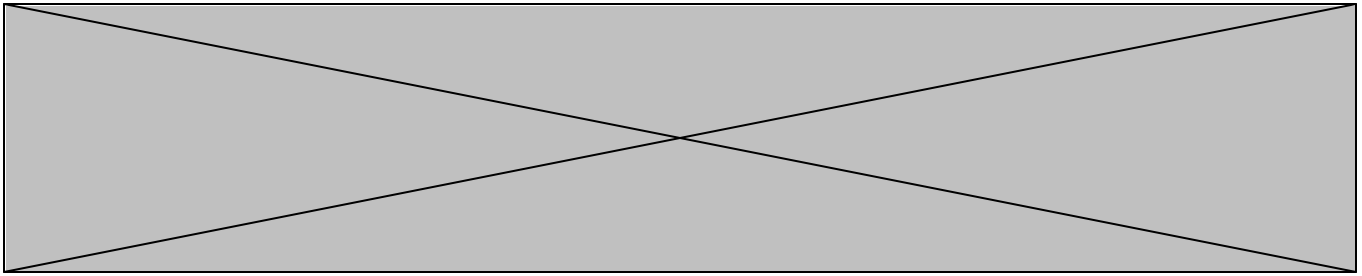
In terms of training our forces, the Air Force and Navy aircrew combat training system are also heavily dependent on the 1755-1850 MHz spectrum. This system provides realistic training to our aircrews that cannot be gained in flight air combat simulators, while allowing



supervisors to make critical assessments of their performance and give feedback to improve that performance. This is one of the main reasons that American pilots are the best-trained combat pilots in the world. We can ill-afford to send marginally trained aircrews into combat; on the first night of an air war there can be no learning curve. A major impact of reduction of spectrum allocated to federal uses is the effect on training and, consequently, combat readiness. The comprehensive training required to achieve and maintain combat readiness is essential for the effective deployment of our forces for both homeland defense and wartime conditions. This training includes the development of operational tactics and doctrine to ensure that our forces operate at maximum capabilities.

The following is an excerpt of a March 11, 2002 Aviation Week article on this topic, which shows how important a role bandwidth and spectrum played in our current operations:

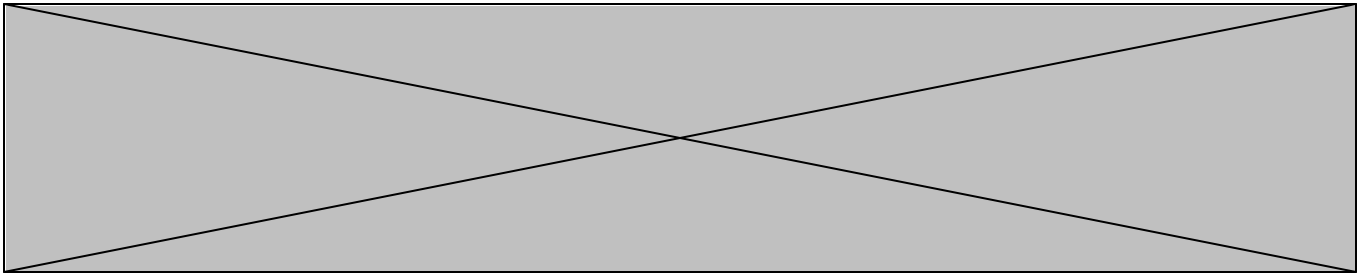
For example, a Rivet Joint (airplane) orbiting over Pakistan or a signals intelligence satellite in space picks up a communication indicating Al Qaeda activity in some corner of Afghanistan. That signal “tipper” is sent to the (combined air operations center). Operators there look for the fastest intelligence platform – Joint Stars, AWACS or P-3, for example – and send it to the hot spot to begin controlling the local engagement using its wide area sensors. Meanwhile, a slower Predator (unmanned plane) is turned and starts taking its acute but narrow field-of-view sensors to the scene... The Predator shows up and relieves the manned aircraft, which moves off to the next problem. The UAV then provides precise target coordinates to an AC-130 gunship or a strike aircraft.



Virtually all of these systems played a key role in the Allied victory in Kosovo and are now being used in Afghanistan in the war on terror. The success of these operations would be unlikely without satellite-based communications, navigation, and reconnaissance, without well-trained combat aircrews, without precision-guided weapons, and without tactical radio relay systems.

In an era of reduced force structure and increased mission responsibilities these systems serve to enhance significantly our operational capabilities. Enhanced knowledge of the battlefield (or, situational awareness) and precise engagement capabilities obtained from these spectrum-dependent force-multiplier systems protect our forces throughout the full range of U.S. involvement, from combat to peacekeeping and humanitarian operations.

I want to say in the most unequivocal way possible that the loss or degradation of our ability to perform these crucial functions would have severe consequences for national security. It would result in mission failures and increased casualties in future operations, as well as the loss of vital intelligence information to the President and senior leaders. As Secretary Rumsfeld and then Chairman of the Joint Staff Shelton wrote to Senator Daschle on August 27, 2001, “Access to the radio frequency spectrum is essential to our success in all future real-world operations. Lack of adequate spectrum will jeopardize our national security.”



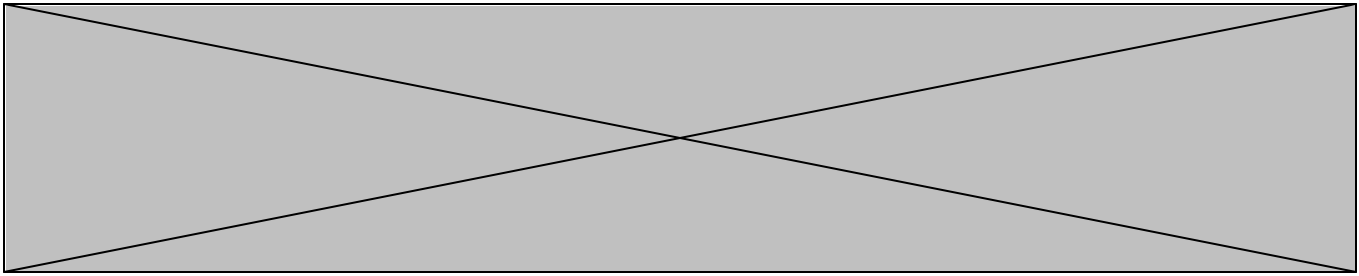
Access to sufficient spectrum will be even more important to our military in the future.

All of our transformational priorities depend on it. Spectrum supports the six goals from the Quadrennial Defense Review. Access to bandwidth and spectrum help the military:

- Protect our bases of operation and our homeland
- Deny enemies sanctuary
- Project power in denied areas
- Leverage information technology
- Enhance information operations, and
- Maintain our unhindered access to space

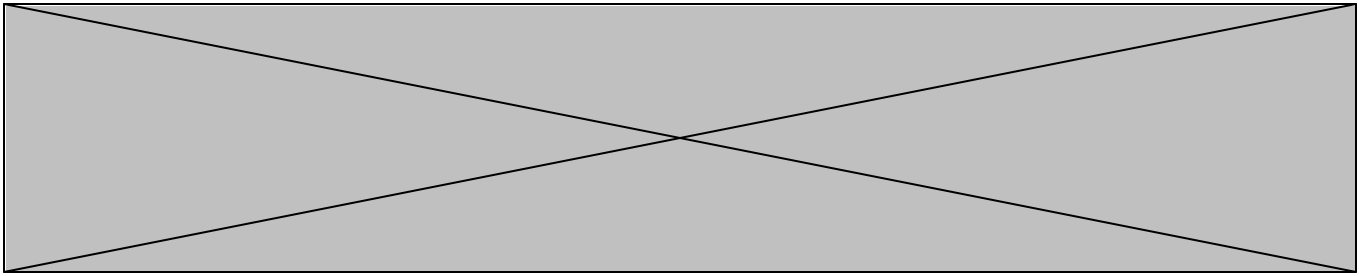
Just as in the civilian world, the military is seeing a quantum leap in the demand for spectrum. Transformation is driving this and will continue to drive it. Without sufficient spectrum, there is no transformation. And without transformation, our military forces may not be able to maintain the crucial edge needed to confront and defeat the nation's 21st Century enemies.

Much of DoD's spectrum use is unique. Unlike the commercial sector's drive for low cost, high revenue solutions, the DoD's core belief is that where lives are at stake, there is no margin for error – the "call" must get through. When an aircraft is guiding a precision weapon, or a commander is relaying life-saving information to troops on the ground, there cannot be



“busy” signals. Some spectrum use that industry might label as “inefficient” is actually designed for anti-jam systems, low probability of intercept, and other “counter counter-measures.” For the military, “efficient spectrum use” often translates into “guaranteed information delivery” and because of that, commercial standards that allow a certain percentage of built-in busy signals or dropped calls cannot be tolerated. Nor, in many cases, are commercial measures of efficiency useful.

Another example of DoD’s unique use is that we often operate many different emitters in close proximity to each other. Our AWACS command and control aircraft uses 50 antennas to track other platforms, communicate and direct the battlefield. If one system on the airplane were changed it would affect all of the others. How this kind of equipment interacts with each other is really a science. The issue is complicated when talking about warships, such as aircraft carriers, that have a large number of emitters and also handle live ordnance on the decks—electromagnetic energy can in some cases cause ordnance to detonate. The Joint Spectrum Center does a great deal of analysis in this area, mitigating interference between different pieces of equipment and ensuring that there are no harmful effects of radiating the equipment. Without their efforts radiating emitters near each other would be hazardous with the risk of interference substantial.

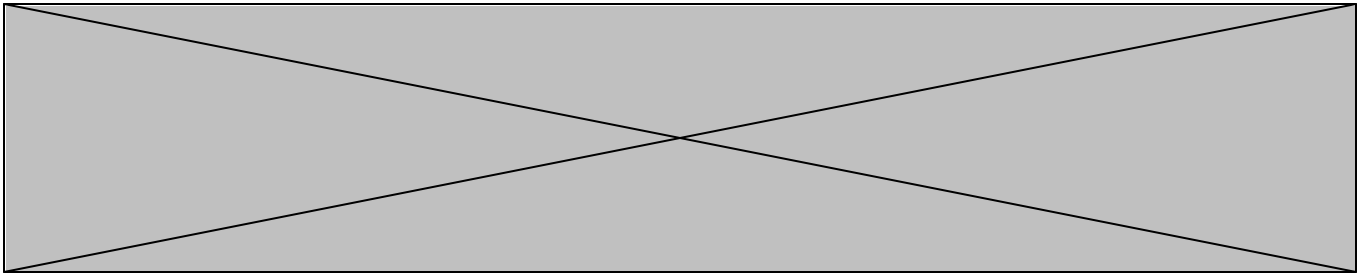


3. DoD Spectrum Principles

DoD spectrum policy is guided by certain core principles. First, spectrum is a vital national resource. DoD understands that its needs must be balanced with other national needs. Therefore, it supports a US spectrum policy that balances military and economic security. DoD believes that the balance of authority between the President's spectrum manager, the NTIA, and the Federal Communications Commission, as implemented at a practical level, helps to achieve the appropriate balance. That balance must recognize that the Department of Defense must have sufficient spectrum to meet the nation's defense needs. This is a longstanding principal of national spectrum management and it should continue.

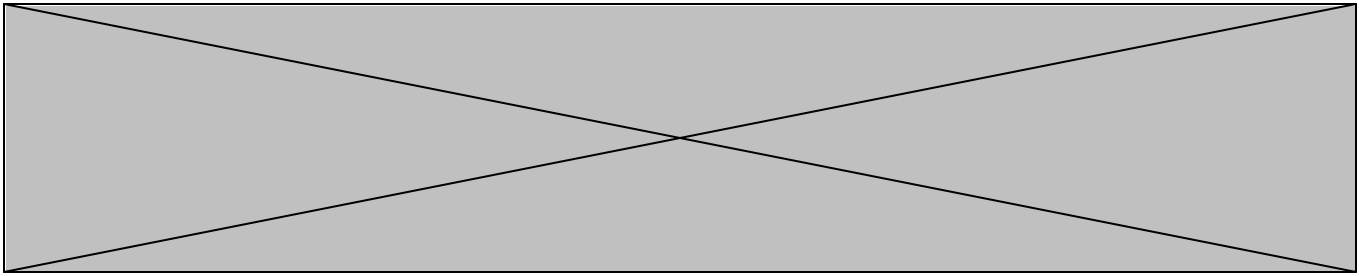
Second, spectrum is critical to DoD. It is a core enabler of what we do, and it is indispensable to national security. Therefore, we should not allow lack of sufficient spectrum to be a constraint on the US warfighter or on military capabilities. DoD spectrum needs should be driven by military requirements and capabilities, not spectrum allocations.

Third, DoD recognizes that it must be a good spectrum user. DoD must strive to be as efficient a spectrum user as it can be. For example, DoD is in the process of implementing an internal reorganization to create the Defense Spectrum Office. This is a new entity, co-located with the service frequency management offices, that will among other things focus on spectrum efficient technologies and promote inter-service sharing of spectrum assets.



Fourth, DoD intends to continue investing in new, spectrum-efficient technologies. It will continue to seek to use technology to alleviate DoD's and the commercial sector's long-term needs for additional spectrum. DoD has been a major contributor to the birth of proven spectrum efficient technologies, including CDMA and software defined radio, and those that show potential, such as ultra wideband. Significant research is ongoing within DoD in search of efficient technologies. This research includes extensive work on such topics as adaptive spectrum usage, frequency and bandwidth agility, phased-array antenna configurations, interference mitigation techniques, congestion control technologies and numerous networking projects. In addition, DoD continually seeks to better manage its spectrum allocations. For example, it will seek to move fixed use assignments out of lower frequency bands and into bands less suitable for mobile applications.

Fifth, DoD commits to actively supporting US policies and interests in international organizations and multinational and bilateral negotiations for spectrum allocation and use. The Department of Defense works with the State Department and other federal agencies on international negotiations regarding spectrum allocations and related matters, under the auspices of the International Telecommunication Union and regional telecommunication and related international organizations and with other countries on bilateral matters. The cycle of preparations is a permanent, ongoing process leading up to World Radiocommunication

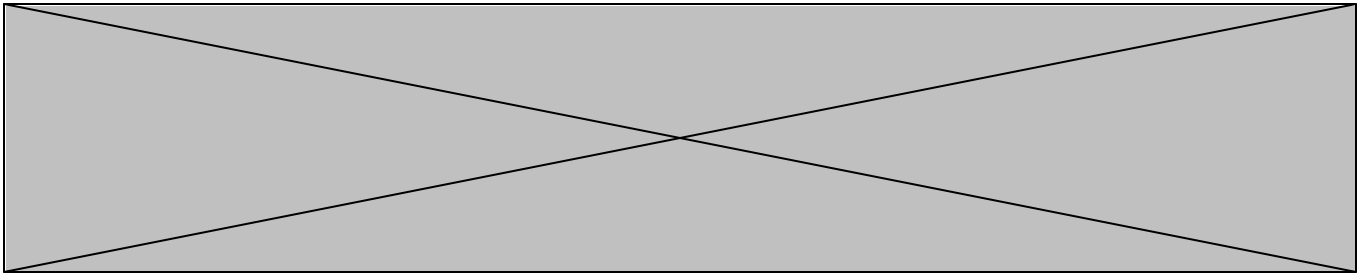


Conferences, which are held about every three years.

4. Spectrum Management Process

DoD is a user - a large user - of frequency spectrum. We understand that our role is not that of a regulatory body, and we believe that the FCC and NTIA are the proper bodies to address national spectrum policy. Nonetheless, we welcome participating in the discussion and in formulating a national spectrum strategy. We believe that the current spectrum management process creates imbalances and asymmetric risks for the incumbent uses. These must be set straight through effective use of a rational, long-term spectrum management policy that mirrors national priorities. In developing those priorities, DoD believes it is important to have a spectrum management system that recognizes national defense as a top priority in spectrum allocation, that DoD needs long-term certainty and reliability of access to spectrum, and that, in those cases in which spectrum is reallocated from defense use to commercial use, DoD should not bear all the costs and risks associated with the reallocation.

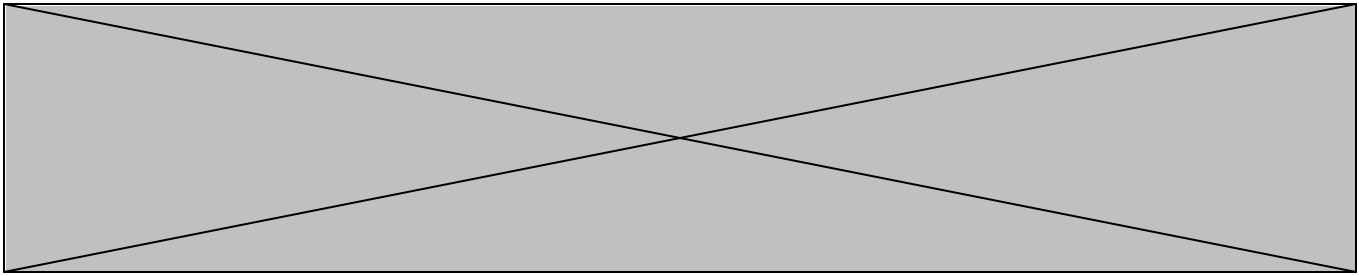
There's another element involved in these allocation decisions as well. The risks to the incumbents are entirely asymmetric: this is true whether DoD is being asked to move, as with 3G, or to accommodate a new, potentially disruptive technology, as with UWB. When the incumbents are asked to move, they bear the risks that the new allocation will not be free of



interference, that the costs will be greater than predicted, and that the technical characteristics will not be as beneficial to the use. The party asking for the incumbent to relocate bears none of these risks and costs.

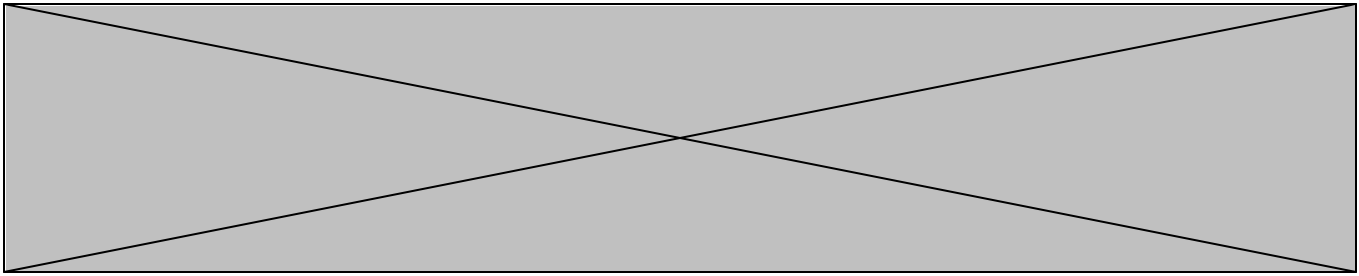
The uncertainties caused by the constant threat of relocation poses serious issues for our long-term planning. Will we be required to move? When will we get the money to move? Will we need to retrain? Will we retrain in time to be prepared to deploy in an emergency? Will we need to change concepts of operations to account for degraded capability? Will we be able to get host nation approval, when needed, to use systems in the new frequency band in all parts of the world where we might need to do so? Will our allies who bought inter-operable systems now also be required to modify their equipment? And if so, who pays their bills? Will the new spectrum be free of interference? And on and on.

The issue is not simply one of increased money to pay costs of moving; the Department of Defense bears the risk of overcoming these and any technical and regulatory challenges. And most importantly, we bear the risk of potential failure of our equipment caused by hasty relocation decisions. Due to the nature of our responsibilities in keeping this country free and safe and protecting the lives of the young men and women who serve in our military, a relocation that compromises our essential capability is unacceptable.



5. Third Generation Wireless

In October 2001, NTIA, FCC, DoD and other Executive Branch agencies developed a plan to assess spectrum for advanced wireless services. DoD has been supporting this viability effort and it is still ongoing. A few points must be understood in this context. First, the process is a viability assessment that is examining current uses of the bands and feasibility of sharing or relocating certain users. The goal is to reach solutions that best serve the national interest – balancing commercial goals with national security and public safety interests. Second, the Viability Assessment's Terms of Reference require that the parties take into account changing DoD needs following the September 11 attacks. Since that tragic date, DoD has accelerated its move to a transformed, mobile, networked and flexible military. In addition, it has a new mission for homeland defense, as evidenced by the creation of Northern Command, a new combatant commander for the continental United States. Spectrum needs associated with NorthCom currently are being examined. These new homeland missions may include protection of critical infrastructure and support for major events. I note that last week the President asked the Congress to work with him to create a Cabinet-level agency for homeland defense. In short, DoD's potential need for access to additional spectrum – not to mention its need to maintain existing allocations – must be considered in the viability assessment. Third, I'd like to commend the staffs of the FCC and NTIA for their tireless and skilled work throughout this

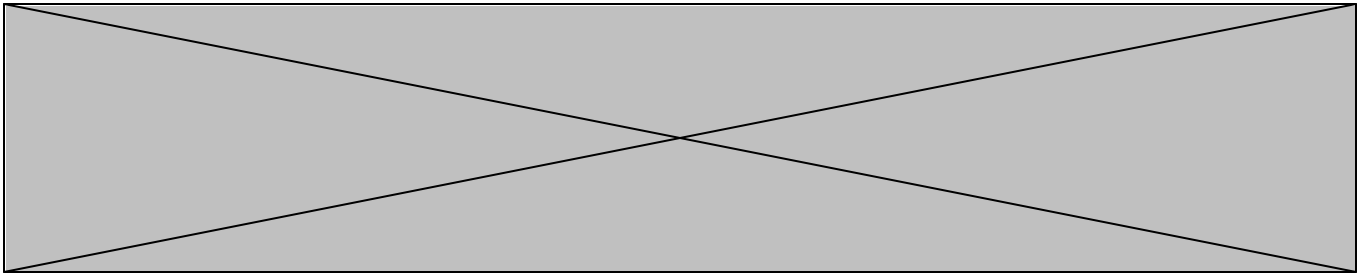


viability assessment.

The 1755-1770 band has superior features that make it a vital resource for military applications. The band's characteristics uniquely enable small antennas, sufficient antenna beam widths for simple reliable link establishment and sustainment, low power transmissions that support extended communications ranges and high data-rate channels. No other spectrum band presently available to the Government and not overcrowded possesses all of these attributes.

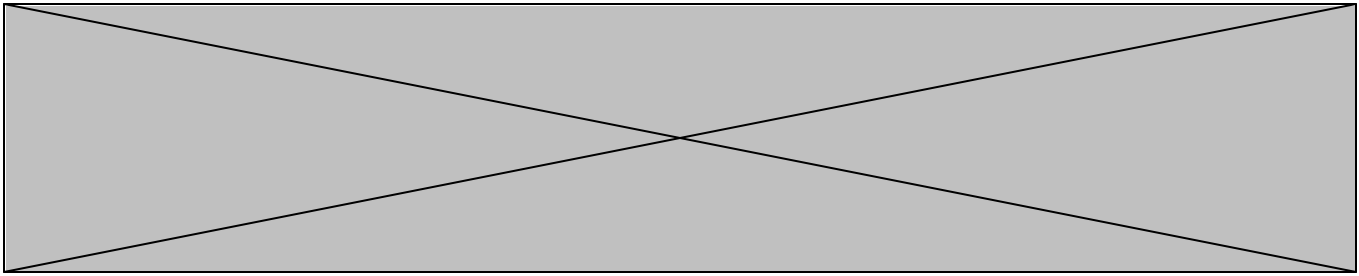
In addition, the US employs the same military systems as many of our allies and coalition partners around the world – in fact many of them procured systems specifically to interoperate with ours. Any decision to modify equipment or change the band-operating capabilities would be detrimental to our allies. Requiring them to pay for new equipment merely because of a US domestic spectrum allocation decision would be problematic.

All major DoD systems in the band have received, or are in the process of receiving, host nation coordination, where needed. These are negotiated on a bilateral basis and allow DoD to operate our systems in the national territories of our allies and coalition partners. In one case, it took the US Central Command six years to get host nation approval to operate our tactical radios in a specific, important country. Were we required to move out of 1755-1770, that clock would start anew and—who knows for how long—those radios would be unusable in that theater and in other key countries.



Some of the systems that use spectrum in the 1755-1770 MHz band are: space operations; Tactical Radio Network Systems; Air Combat Training Systems; and Precision Guided Munitions. Space operations are particularly difficult, expensive and time-consuming to relocate because some of the satellites using the band are not due to be replaced until 2017 and once launched, satellites cannot simply be “retuned.” So they either must have access to the band until then, or the new licensee must pay for new satellites well ahead of the end of their scheduled service life, at great additional and unnecessary cost. Air Combat Training Systems are used to train pilots and are critical for use in training aircrews before deployments to combat zones—all deploying aircrew use these systems for realistic training. Precision Guided Munitions (PGMs) make modern air warfare possible. As the name implies, they allow for precision targeting that enables pilots to accurately deliver their weapons from farther outside the range of the enemy threat. They also increase the effectiveness and lethality of airpower, making operations like Enduring Freedom in Afghanistan and Allied Force in Kosovo possible. And they greatly reduce the risk of collateral damage caused by a weapon veering off-course. In short, PGMs have revolutionized air power.

Our aircrews must “train like they fight.” They must be allowed to drop live ordnance on training ranges in the United States, and they must have unimpeded access to the spectrum required to do so. I would also note that DoD retains access to the 1710-1755 MHz band at

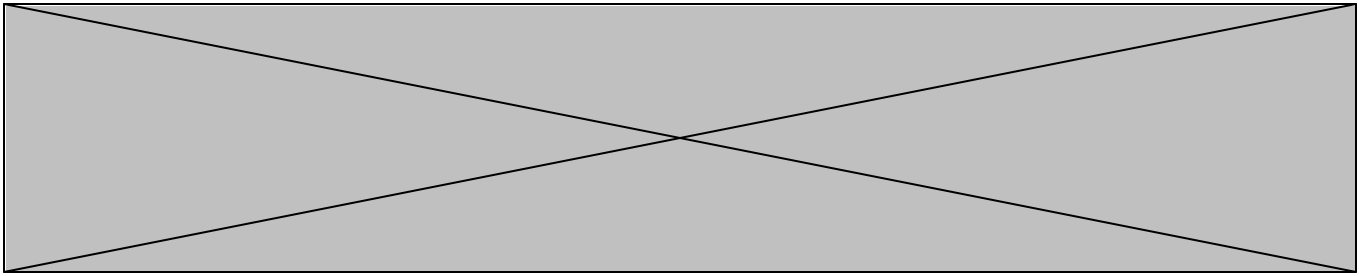


16 protected sites. One important function that takes place at these 16 sites is Aeronautical Telemetry which takes place at 10 of the 16 sites and is most commonly associated with testing of airborne equipment. The telemetry downlinks can be from manned or unmanned aircraft, missiles or other ordnance devices. Aircraft operations are expensive and often not easily replicated, therefore the signals are robust to prevent loss of data resulting in a wide area of potential interference. Access to the spectrum at all of these sites is essential and shows how some of the impacts from previous reallocations have been mitigated.

DoD believes that the burden must be on the proponent of any new spectrum allocation to prove that they really need that spectrum. In the 3G debate, it is not clear how much new spectrum is really necessary. Some companies have begun to deploy 3G services without additional spectrum allocation. Many argue that the FCC's lifting of spectrum caps, and steps allowing wireless carriers to share spectrum, have mitigated the requirement for new spectrum allocations.

DoD understands the importance of a vibrant industrial base, including the wireless sector. However, especially in uncertain times, policy makers must protect our national security and ensure that spectrum limitations are not a constraint on our warfighters.

DoD is open to finding solutions, provided DoD's interests and requirements are met.

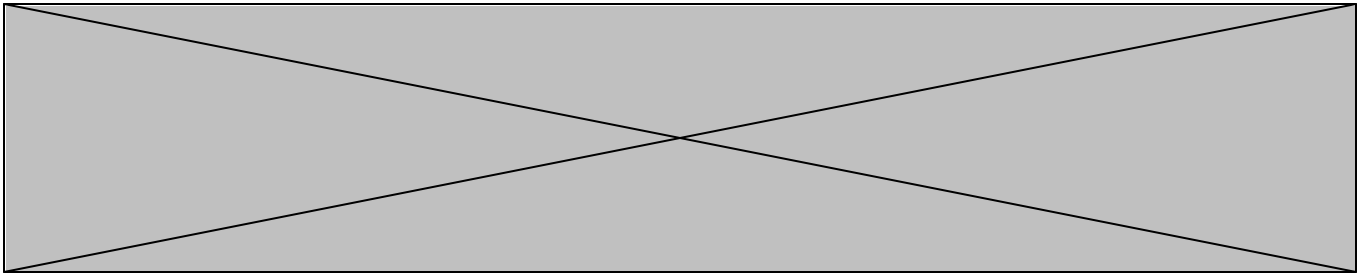


Such solutions must include identification of comparable spectrum for displaced DoD functions, full compensation for costs incurred and the requisite time to transition. These are not new requirements, and we believe they are reasonable.

Third-Generation wireless is by no means the only spectrum-dependent technology for which spectrum needs must be balanced with those of national security. One of the newest spectrum-dependent technologies competing for spectrum access is Ultra Wideband. Unlike traditional wireless technologies, UWB consists of radio pulses that emanate, at low-power levels, across a wide range of spectrum bands. Thus, as a result of the FCC's April 2002 Report and Order, UWB will operate, on a non-licensed basis, across many different spectrum bands, in which hundreds of government and commercial users are licensed to provide hundreds of vital and needed wireless services—including vital military and public safety systems. Never before have the FCC and the NTIA authorized unlicensed use of a horizontal slice of spectrum, including certain so-called restricted bands. The effect on DoD and other incumbent users will be evaluated as UWB services are deployed.

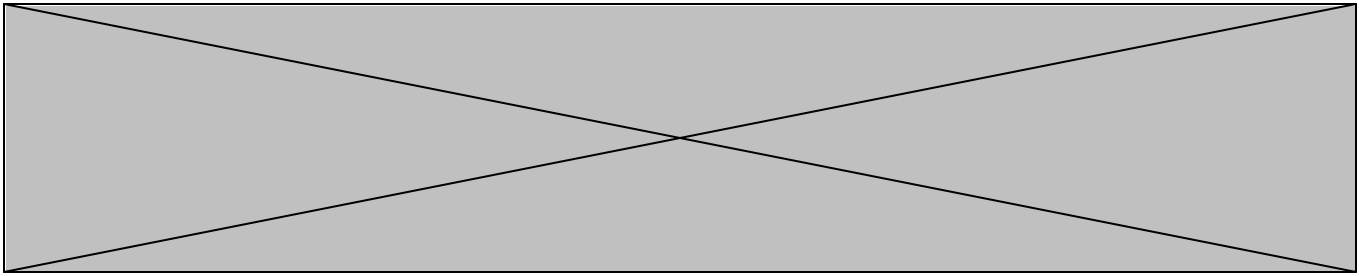
6. Comparable Spectrum and Cost Reimbursement

Section 1062(b) of the National Defense Authorization Act for Fiscal Year 2000 (47



U.S.C. 921 note), provides that "[if], in order to make available for other use a band of frequencies of which it is a primary user, the Department of Defense is required to surrender use of such band of frequencies, the Department shall not surrender use of such band" until several conditions are met. First, the FCC and the NTIA must make available to DOD "for its primary use, if necessary, an alternative band or bands of frequencies as a replacement for the band to be so surrendered." Second, the Secretaries of Defense and Commerce, and the Chairman of the Joint Chiefs of Staff, must jointly certify to the congressional armed services and commerce committees that "such alternative band or bands provides comparable technical characteristics to restore essential military capability that will be lost as a result of the band of frequencies to be so surrendered."

DoD's certification takes into account whether the replacement spectrum for different DoD systems has suitable technical characteristics and similar regulatory status so that the displaced function can be performed with no degradation in capability. In considering spectrum replacement issues, it is important to emphasize that spectrum is not fungible. Different parts of the spectrum have different physical characteristics. For example, some bands allow for propagation through foliage, and others through buildings. DoD has often chosen the particular bands of spectrum that DoD currently occupies for the particular physical characteristics of that band. The reallocation process should provide the DoD systems with the same regulatory

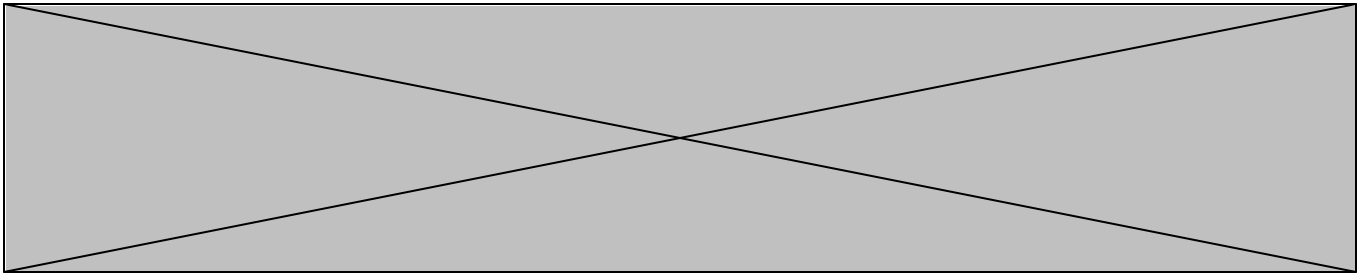


status as the systems had in the spectrum replaced. And unless DoD keeps the same priority as well as the comparable technical characteristics, a move from a band where DoD is primary user to a band where DoD is not the primary user would not preserve DoD's essential operational capabilities with respect to that spectrum.

With respect to the costs to DoD -- that is, the cost to American taxpayers -- when DoD yields spectrum to commercial users and moves to replacement spectrum, the law (47 U.S.C. 923) provides that the commercial users will pay DoD in advance for the costs of relocating operations to the replacement spectrum, including the costs of any modification, replacement or reissuance of equipment, facilities, operating manuals, or regulations. NTIA's Final Rules to implement these statutory requirements will be published in the Federal Register. I commend the NTIA and other IRAC agencies' personnel for their hard work over two and one-half years in developing a workable set of Rules.

In addition, the Administration is considering submitting a proposal to Congress to revise the current cost reimbursement statutory provisions in order to streamline the cost reimbursement process and ensure full cost reimbursement to effected government agencies. It is currently developing legislation to implement this proposal. We are working with OMB, NTIA and other Executive Branch agencies in such efforts.

Cost reimbursement is a critical issue -- but DoD's concern over relocation is not merely



a cost issue. To some extent, that risk is quantifiable and therefore not as troubling as the potential risk to our operations, which I outlined earlier, including the risk that our systems won't operate, or will operate improperly. These are tough issues and issues that take a tremendous amount of time and effort – effort that could be channeled into serving our warfighters.

7. Conclusion

In closing, we must keep in mind that spectrum is vital to our national security. It is also the critical resource required for transformation of our military forces to meet the challenges of the 21st century and beyond. Spectrum is the very medium through which our military defends our security. I am sure that you will agree that this is its highest purpose.

In the Department of Defense, we have a duty to the young men and women who defend our country. We have a duty to ensure that they have the tools, including spectrum, that they need to do their job. We owe them policies to ensure that lack of access to spectrum is not a constraint on their war fighting capability.

I look forward to working with you, our colleagues in other parts of the government, and members of the private sector to develop a national spectrum policy that preserves spectrum access for national security while balancing commercial interests. We must continue to ensure that our military has ample spectrum to defend our nation and our ideals.